

Figure 1

1264            1274            1284            1294  
|            |            |            |  
CAAATTATAAACATTGGCAGAAAGTAGGAAAA  
||||| ||||| | | | | | | | | | | | | | | | | | | |  
CAAATTAAAAACTTTAACGAAAGTAGGAAAA  
gp120 422-432  
rv\_85283

Figure 2

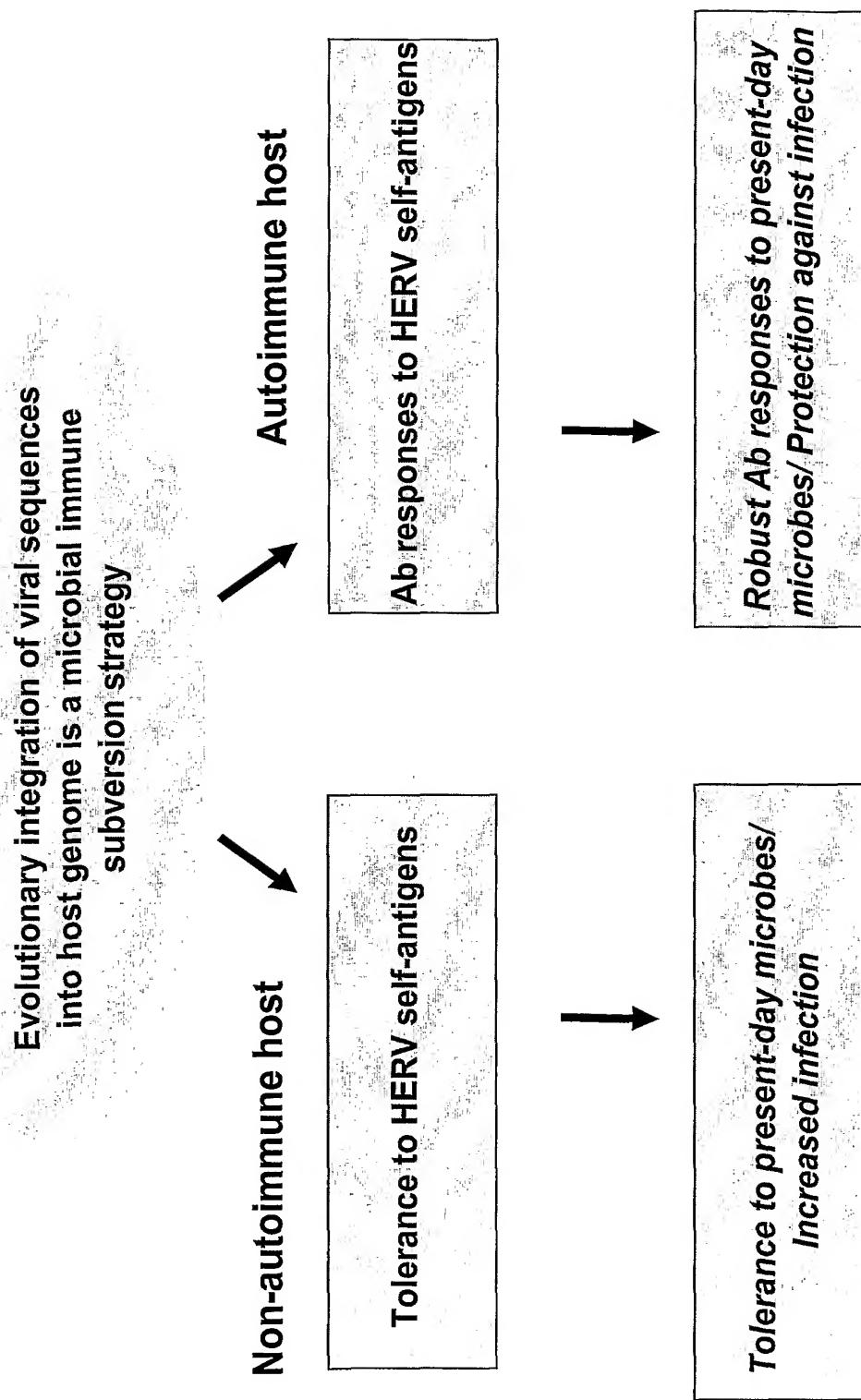


Figure 3

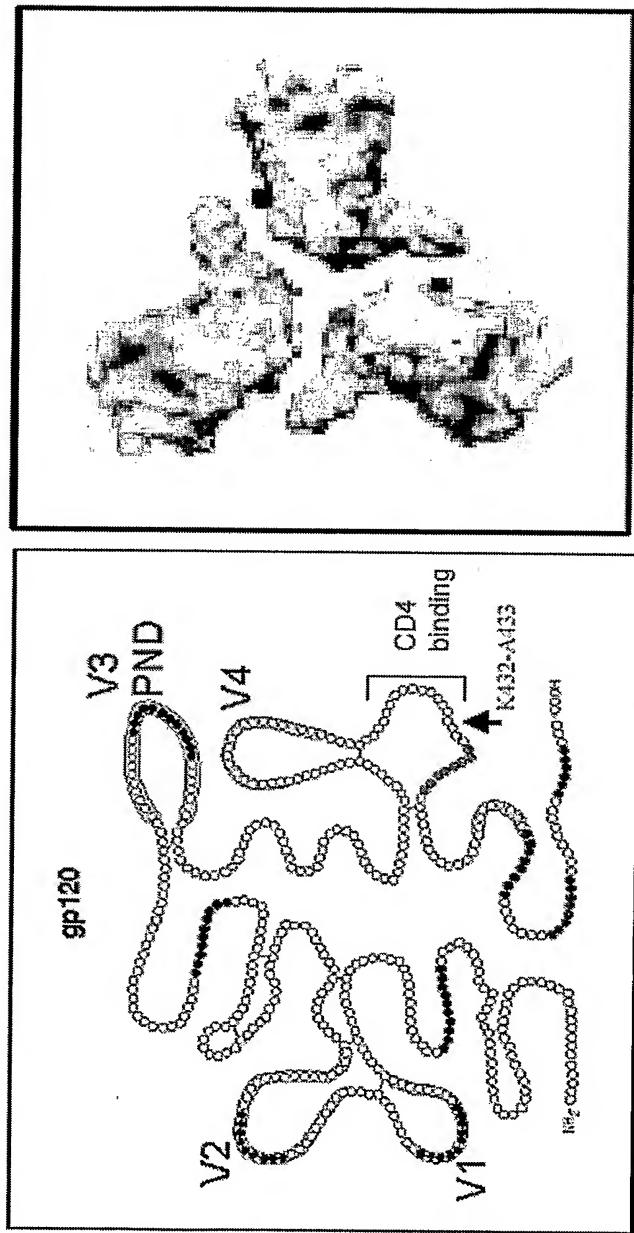


Figure 4

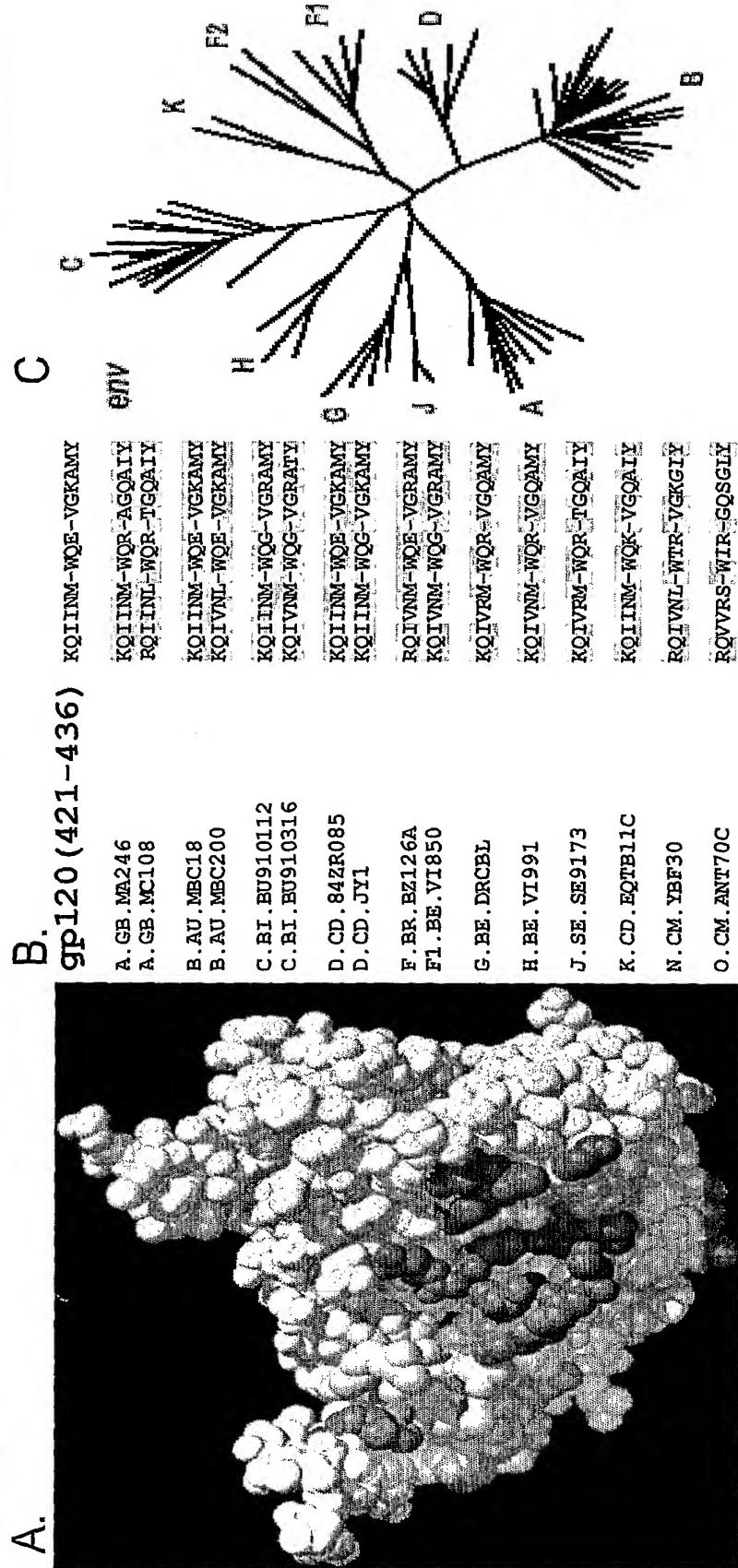
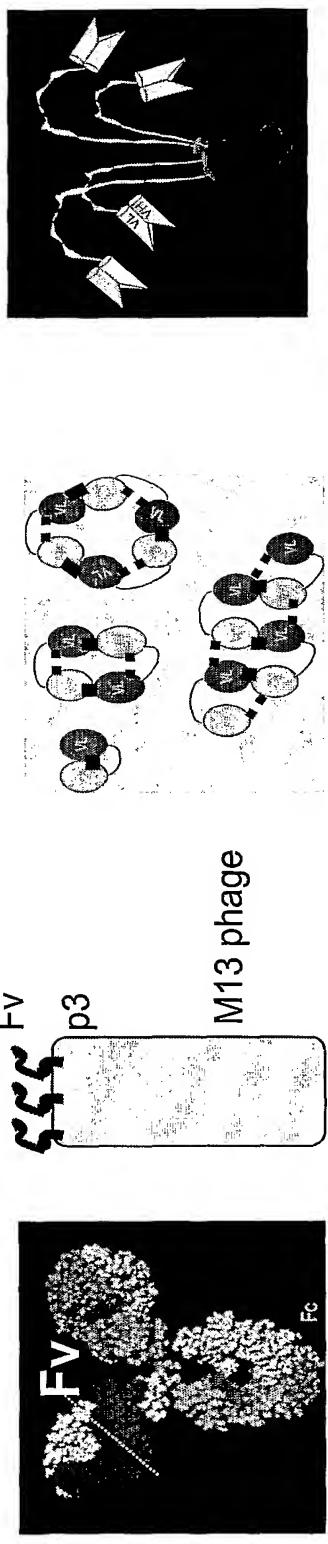


Figure 5

Fv variants with improved gp120 binding properties

- Affinity, avidity, cross-clade HIV neutralization
- Neutralizing potency consistent with immunotherapy use

**A. IgG**      **B. Phage scFv**      **C. Soluble scFv**      **D. Multivalent Fv**



**E. IgM**      **F. Linker-optimized scFv**      **G. Hybrid/affinity matured scFv**

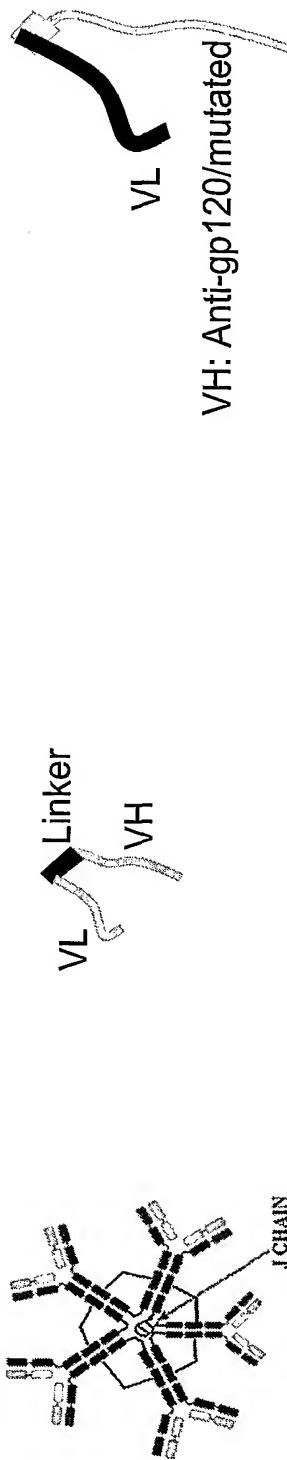
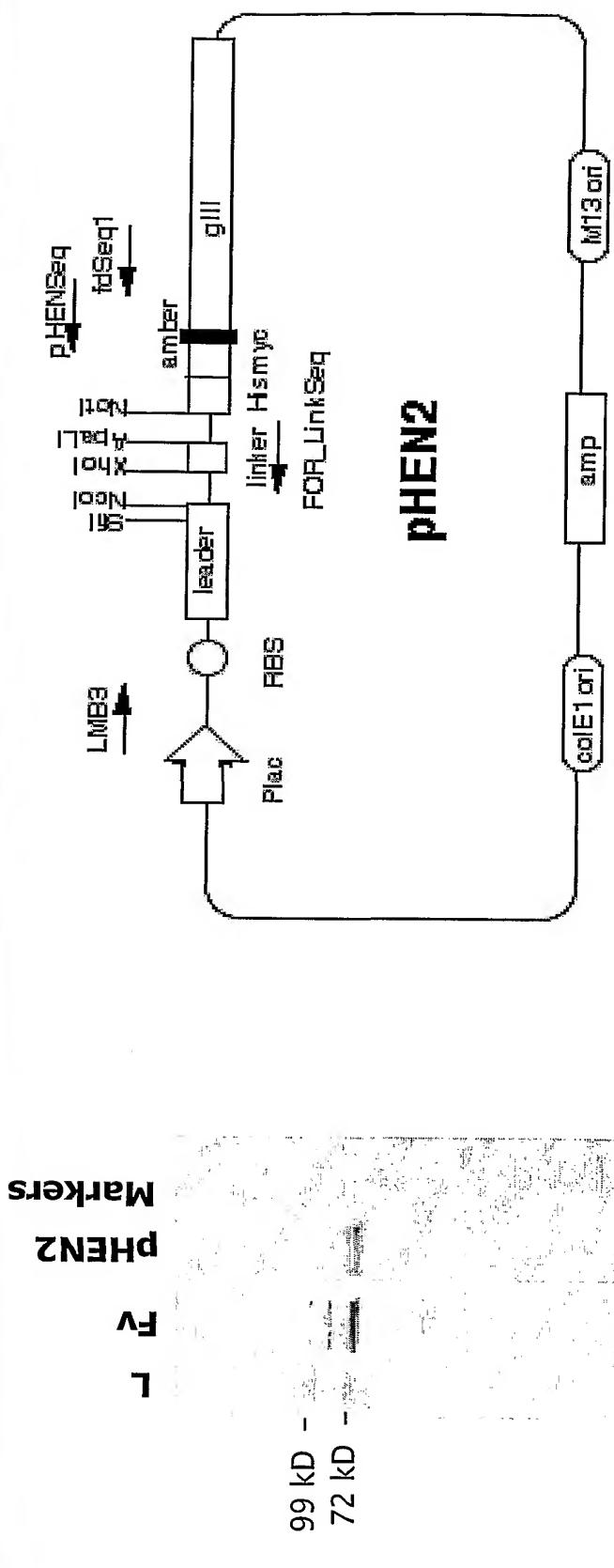


Figure 6

Library	Vector	Source	Full-length Inserts, %	Size	Diversity %	Antibody expression, mg/L
L chain	pCT5his6	PBL, lupus	72	$8.8 \times 10^5$	54	~2
Fv	pHEN2	PBL, lupus	60	$1.4 \times 10^7$	100	~3



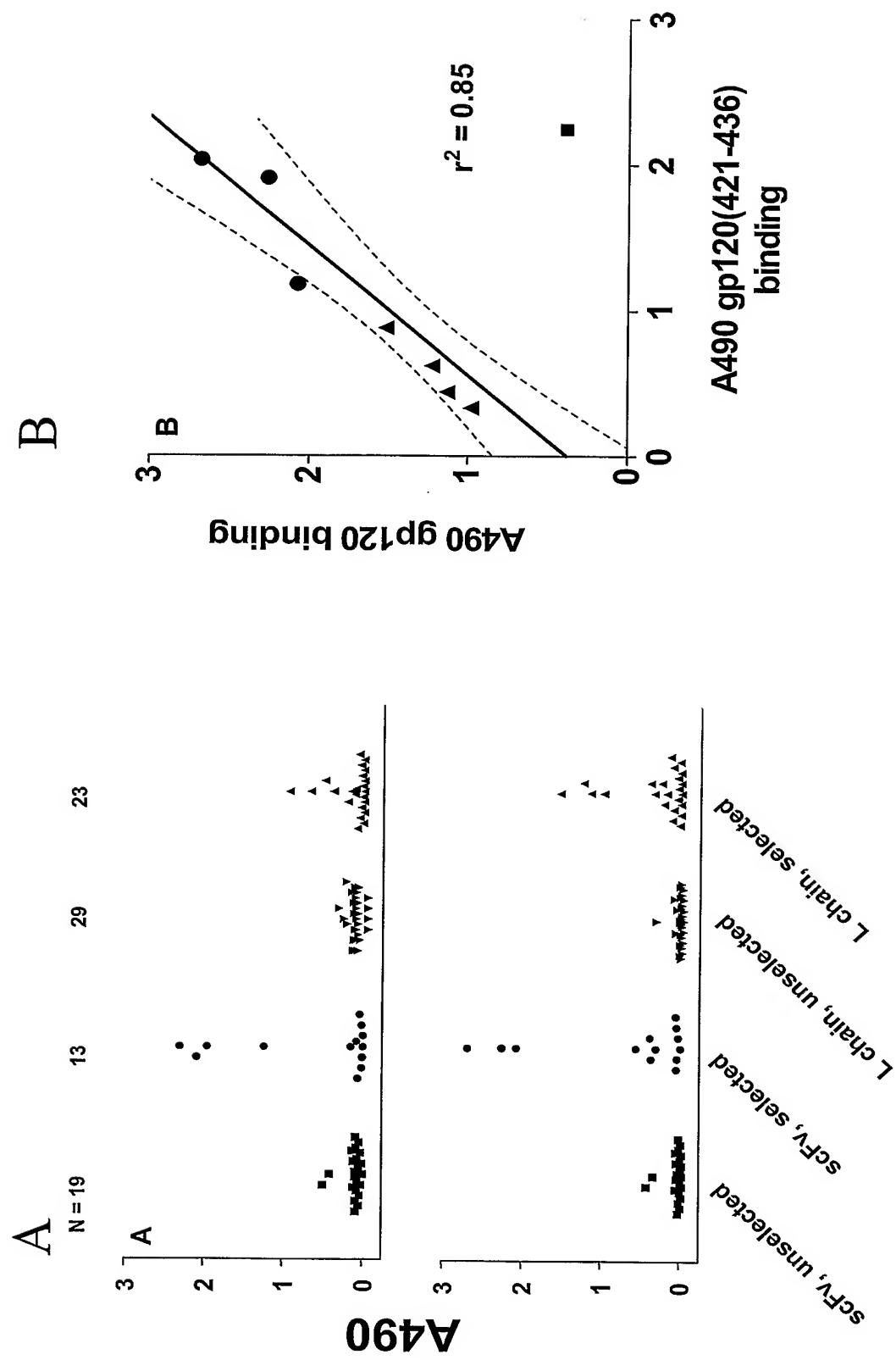


Figure 8

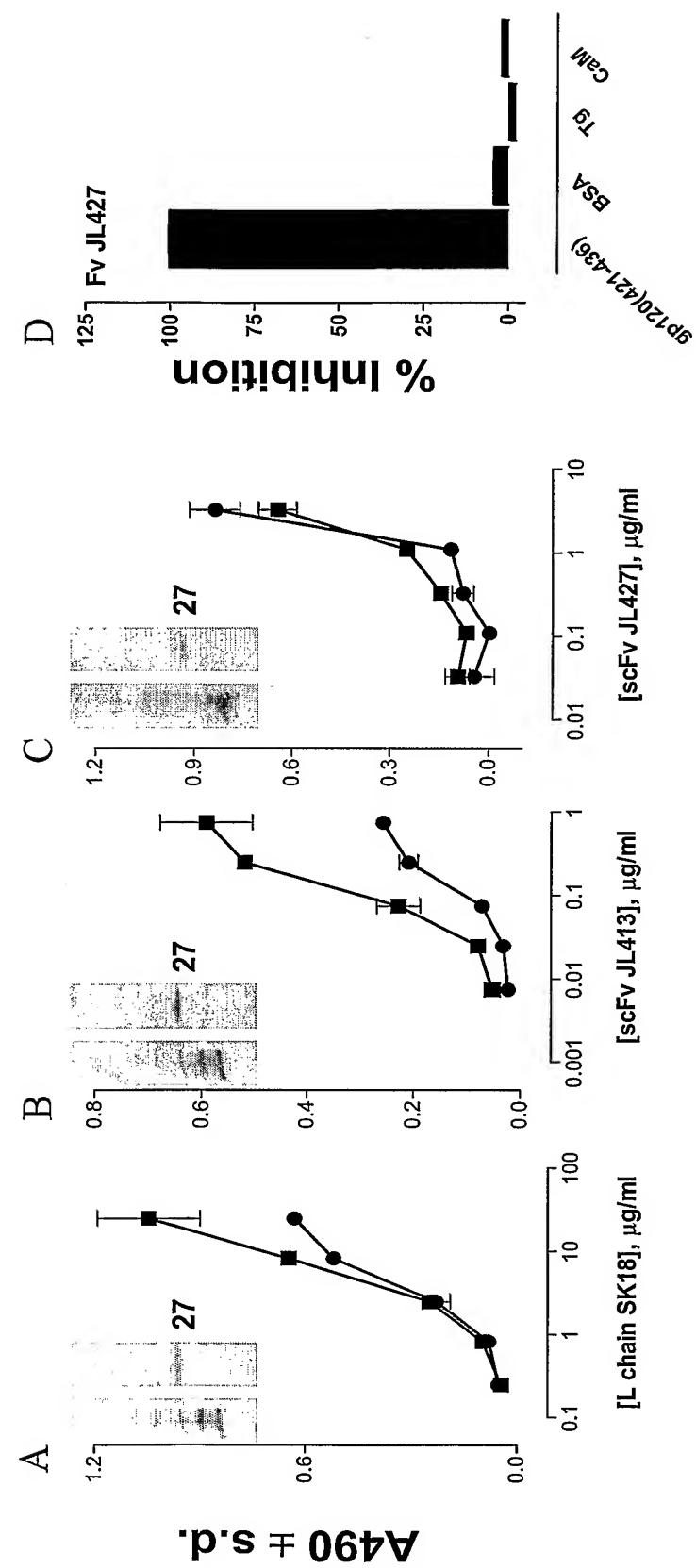


Figure 9

scFv JL413 VL domain

1 ASP VAL VAL MET THR GLN SER PRO SER VAL SER ALA SER VAL GLY ASP ARG VAL THR  
 21 ILE THR CYS ARG ALA SER GLN GLY ILE GLY ASN TRP ILE ALA TRP TYR GLN GLN LYS PRO  
 41 GLY LYS ALA HIS ASN LEU ILE TYR GLY ALA SER SER LEU GLN SER GLY VAL PRO SER  
 61 ARG PHE SER GLY SER GLY THR ASP PHE THR LEU THR ILE SER SER LEU GLN PRO

scFv JL413 VH domain

81 GLU ASP SER ALA THR TYR TYR CYS GLN GLN ALA LEU VAL GLY THR PHE GLY GLY GLY THR  
 101 LYS VAL GLU ILE LYS ARG  
 21 GLN VAL ASN LEU ARG GLU SER GLY PRO GLY LEU VAL LYS PRO SER GLU THR LEU SER LEU  
 41 THR CYS THR VAL SER GLY GLY PHE ILE SER SER TYR TYR TRP SER TRP ILE ARG GLN PRO  
 61 PRO GLY IYS GLY LEU GLU TRP ILE GLY PHE THR TYR TYR SER GLY SER THR TYR TYR ASN  
 81 PRO SER LEU LYS SER ARG VAL THR ILE SER VAL ASP THR SER LYS ASN GLN PHE SER LEU  
 101 LYS LEU SER SER VAL THR ALA ALA ASP THR ALA MET TYR CYS TYR CYS TRP GLY GLN GLY  
 THR LEU VAL THR VAL SER SER

Figure 10 A

scFv JL427 VL domain

1 GLN SER VAL LEU THR GLN PRO PRO SER VAL SER GLY ALA PRO GLY GLN ARG VAL THR ILE  
 21 SER CYS SER GLY SER SER ASN PHE GLY LEU ASN TYR VAL TYR TRP TYR GLN HIS PHE  
 41 PRO GLY THR ALA PRO LYS LEU ILE TYR ARG ASN ASP GLN ARG PRO LEU GLY VAL PRO  
 81 ALA ARG PHE SER GLY SER LYS SER GLY THR SER ALA SER LEU ALA ILE SER GLY LEU ARG

101 SER GLU ASP GLU ALA ASP TYR TYR CYS GLN SER TYR ASP ASN SER LEU SER GLY TRP VAL  
 121 PHE GLY GLY GLY TYR GLN LEU TYR VAL LEU GLY  
 41 PRO GLY LYS GLY LEU GLU TRP VAL SER TYR ILE GLY ARG SER GLY SER HIS THR ASN TYR  
 81 ALA ASP SER VAL LYS GLY ARG PHE THR ILE SER ARG ASP ASN SER LYS ASN THR LEU TYR  
 101 LEU GLN ILE ASN SER LEU ARG ALA GLU ASP THR ALA VAL TYR TYR CYS ALA ARG GLY LEU  
 121 PRO ASN TYR GLY MET ASP ILE TRP GLY GLN GLY THR THR VAL THR VAL SER SER

scFv JL427 VH domain

1 GLN VAL GLN ILE GLN SER GLY GLY LEU VAL GLN PRO GLY ARG SER LEU ARG LEU  
 41 SER CYS ALA ALA SER GLY PHE THR PHE SER SER TYR GLY MET HIS TRP VAL ARG GLN ALA  
 61 PRO GLY LYS GLY LEU GLU TRP VAL SER TYR ILE GLY ARG SER GLY SER HIS THR ASN TYR  
 81 ALA ASP SER VAL LYS GLY ARG PHE THR ILE SER ARG ASP ASN SER LYS ASN THR LEU TYR  
 101 LEU GLN ILE ASN SER LEU ARG ALA GLU ASP THR ALA VAL TYR TYR CYS ALA ARG GLY LEU  
 121 PRO ASN TYR GLY MET ASP ILE TRP GLY GLN GLY THR THR VAL THR VAL SER SER

Figure 10 B

Light chain SK18 VL domain

1 ASP ILE GLN MET THR GLN SER PRO SER SER LEU SER ALA SER VAL GLY ASP ARG VAL THR  
21 VAL THR CYS ARG ALA SER GLN SER ILE SER SER TYR LEU ASN TRP TYR GLN GLN GLN PRO  
41 GLY LYS ALA PRO IYS LEU LEU ILE TYR ALA ALA SER SER LEU GLN SER GLY VAL PRO SER  
61 ARG PHE SER GLY SER GLY THR ASP PHE THR LEU THR ILE SER SER LEU GLN PRO  
81 GLU ASP PHE ALA THR TYR PHE CYS GLN GLN SER TYR SER ILE PRO ARG THR PHE GLY GLN  
101 GLY THR LYS VAL GLU ILE LYS

Figure 10 C

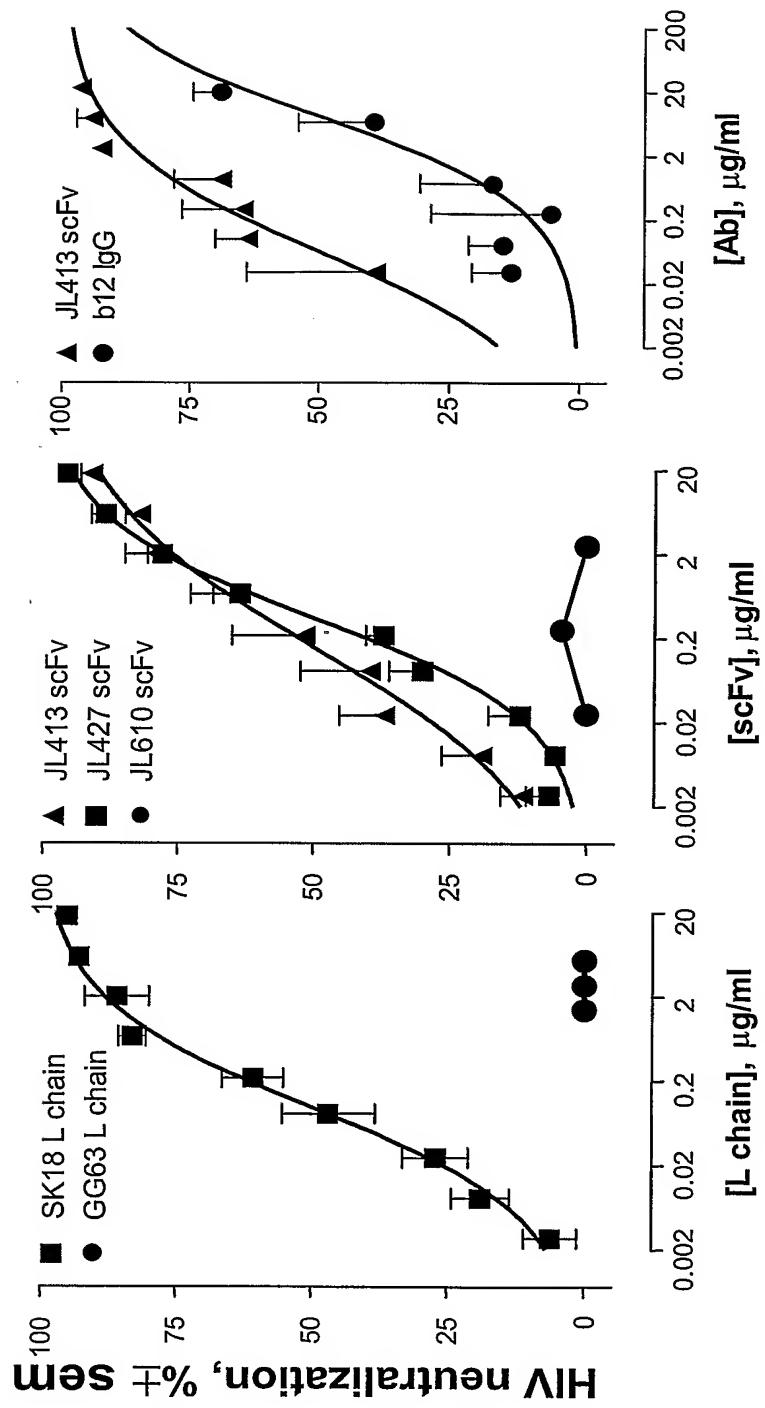


Figure 11